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Chamber of Commerce of the U.S. of America

Depreciation

Washington, D.C.

[1921]

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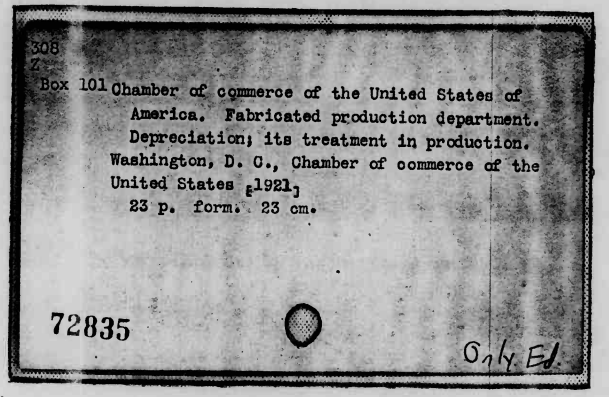
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DEPRECIATION

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ITS TREATMENT IN PRODUCTION

FABRICATED PRODUCTION DEPARTMENT
CHAMBER OF COMMERCE OF THE UNITED STATES
WASHINGTON, D. C.

Chamber of Commerce of the U.S.
11-1-21

FOREWORD

In presenting this first treatise on Depreciation, we not only have drawn on our own resources, but have had the co-operation of many of the leading authorities in the accounting field, industrial engineers, manufacturers, etc.

We have endeavored to present it in such form as to be enlightening to plant comptroller, auditor, chief accountant, or whoever may be charged with the responsibility of dealing with it, particularly with reference to cost accounting.

If we have contributed helpfully to the clarification of this, one of the most important, yet difficult problems of overhead expenses, we are glad. We invite correspondence.

FABRICATED PRODUCTION DEPARTMENT,
E. W. McCULLOUGH,
Manager.

October 15, 1921.

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DEPRECIATION

Its Treatment in Production

SUMMARY FOR THE BUSY EXECUTIVE

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How the property ledger operates 18

When this pamphlet has served your purpose, send it to your accounting and cost departments for their examination.

DEPRECIATION

Its Treatment in Production

These facts concerning depreciation are still reflected on the books of manufacturers:

1. Depreciation not charged, or charged inconsistently.
2. Depreciation not taken into current, every-day costs.
3. A confusion of different points of view; depreciation for cost and accounting purposes confused with possible realization and replacement values.
4. Wear and tear hastened by inadequate maintenance and careless shop practices.
5. The effect of obsolescence underestimated.
6. Depreciation computed by rule-of-thumb rates regardless of the experience of plant or industry.
7. Depreciation poorly accounted for; the reserve for depreciation misused, general failure to distinguish repairs from betterments and renewals.
8. Depreciation inadequately recorded, little segregation or classification of property, the property ledger used sparingly.

Depreciation attempts to measure the effect of time and production on physical properties and equipment and to record the results in dollars and cents. This computation can not be exact because the elements affecting depreciation are many and their relative importance difficult to determine. The use and character of property, its maintenance, the quality of installation, and often local conditions variously modify the life of property, while an unexpected industrial advance may suddenly terminate the usefulness of property and completely upset depreciation calculations.

One fact concerning depreciation is certain,—it can be postponed but not ultimately avoided. All your plant and equipment suffer from and finally succumb to depreciation. To the

end that this loss may be reasonably controlled and fully reclaimed in manufacturing costs this study of depreciation is directed.

POINT I

Depreciation is an Inescapable Cost of Doing Business to be Provided For by a Regular Charge to Current Operations

Every thousand of brick produced, every case of shoes manufactured, every fashioning of metal and turning of wood, each twist of the handle and blow of the hammer helps to wear out your plant and equipment, and the particular job or process that causes this loss should bear the cost.

Analyze the costs of almost any group of manufacturers marketing the same product and you will detect two kinds of differences; one real, the other accidental. Real differences in cost arise from superior management, higher productivity and better disposition and utilization of capital, etc. Such differences are the very breath and life of business.

The accidental differences are due to the failure on the part of manufacturers to include all the proper and legitimate items of expense in costs, an improper distribution of overhead, etc., and differences of this nature make for business unsettlement. One such accidental difference in costs most frequently found arises where manufacturers do not charge depreciation at all or leave depreciation to be dealt with at the end of the year.

The business man who does not charge depreciation at all is fooling himself. He is making no provision for the inevitable day when his property must be scrapped. His supposed profits may be in fact a distribution of his capital.

The business man who waits until the end of the year to determine his depreciation according to the size of his profits may make the discovery that he has no profits, since he has consistently sold his product upon a cost that was incorrect,—a cost that did not include such a necessary expense of manufacture as depreciation.

The competition of the future should be an informed competition. The basis of lower prices must be a greater efficiency, not incomplete costs. To that end, *everything that goes through your factory should bear its proportional cost of depreciation. Charge depreciation into current costs.*

POINT II

Depreciation for Cost Purposes is not Concerned with Resale or Replacement Values but Aims to Recover the Cost of Assets, Less Any Salvage

The need of depreciation arises from the fact that working assets gradually give out or become obsolete. They are, in fact, used up in production.

Were the assets consumed in any one year their entire cost would be written off during that year, but the process of depreciation is slow, usually extending over a period of years. Hence it is unfair to charge off all the cost in any one year.

It is frequently declared that the moment a machine or piece of equipment enters a plant it becomes second-hand and at once loses a considerable share of the original cost, and it is asserted that this loss of value should be reflected on the books by a sizable first charge for depreciation. But we are not concerned primarily with what property will bring, its resale value, but how property is used up. *The test for depreciation is how long the property will function, how many units it will produce before scrapping time.* Just as the meter notes the flow of current, so depreciation seeks to register in costs the gradual loss of usefulness of plant and equipment.

This loss of usefulness is an incident of time and service and is unaffected by the rise or fall of prices or the possible loss in resale value after purchase.

When the cost of an asset, less any salvage value, has been recovered, the process of depreciation stops,—the consumer has paid for that particular item of service.

There are those who maintain that the obligation of the consumer is one rather of replacement,—building for building, machine for machine. According to this view depreciation should be based on replacement cost rather than actual cost.

The replacement theory substitutes for something certain and definite, the actual cost, a cost of reproduction which is highly speculative and conjectural and requiring frequent revision. It, moreover, seeks to establish for one expense a basis of computation fundamentally different from that used for the other expenses of doing business. Insurance is charged on a basis of actual premiums paid, not on the basis of probable premiums three years hence; rent on the amount actually paid, not

on the problematical rate of the next lease; salaries, light, heat, power, supplies are all charged at actual, not upon a future contingent, cost.

As one writer has expressed it, "The fact that the plant cannot be replaced at the same cost, but only at much more, has nothing to do with the cost of its product, but only with the cost of future product turned out by the subsequent plant." As the product goes through your factory it should be burdened with expired, not anticipated, costs. *Charge depreciation upon actual cost less any salvage.*

Resale and replacement values have uses of their own. Stockholders may desire to know what can be realized on plant and equipment upon liquidation, and for such the resale value of the assets is important information.

Replacement costs govern the settlement of fire losses, for the contract of fire insurance is one of indemnity. Neither original costs nor the accountant's depreciation govern settlement. Indemnity is determined by the actual cash value of the property at the time of the fire, with proper deduction for depreciation however caused.

But the depreciation must have materialized irrespective of any provision on the books of the company. In setting his charge for depreciation the accountant may allow for a factor of obsolescence which may not develop by the time of the fire or he may assume an even and uniform loss from wear and tear over a period of years or upon an incidence of production, whereas the actual wear and tear may be uneven and unexpected, slower or more rapid. This state of facts has led a writer on depreciation, in reviewing the relationship of depreciation to fire losses, to state:

> "Depreciation is after all but an estimate of what may be necessary to meet contingencies, some of them of a speculative kind, and as the losses provided against may have been escaped, a review of all the circumstances so far as they can be ascertained may show a higher value than is stated in accounts drawn up for a different purpose; and, again, where plant has been regularly written down, it does not follow that only the value as so lessened can be claimed (in a fire loss)."

INTENTIONAL SECOND EXPOSURE

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Depreciation and Fire Insurance

As an outgrowth of this study of depreciation an attempt has been made to ascertain the attitude, general theory and rule of fire insurance companies toward depreciation, also to learn what weight was given to reserves for depreciation accumulated on the books of the assured, whether there was a wide recognition of the fact that depreciation is charged for contingencies which may or may not have taken place at a given time; for example, that obsolescence provided for may not have been realized.

The results of this inquiry are not conclusive. There is some confusion of thought, and some actual differences in practice, but the following is fairly clear and certain concerning the attitude of fire insurance companies toward depreciation.

The provision of a Standard Fire Insurance Policy under which the right to "Depreciation" is exercised, is as follows:

> "This policy shall not be liable beyond the *actual cash value of the property at the time any loss or damage occurs*, and the loss or damage shall be ascertained or estimated according to such actual cash value, with proper deduction *for depreciation however caused*, and shall in no event exceed what it would then cost the insured to repair or replace the same with material of like kind and quality."

"The obvious purpose," to quote an insurance adjuster, "of the contract of insurance is *indemnity* without regard to the loss of time, of inconvenience, of annoyance, or consequential injury or damage to the business of the assured."

A factor reducing the loss is the depreciation existing at the time the loss occurs, in the determining of which depreciation enter such elements as the age of equipment, remaining useful life, whether the equipment has been handled carefully or otherwise, whether adequately repaired and renewed, whether driven to the limit or used within bounds, the location of the property, improvements in the art, local conditions and the status of the industry.

Evidence of depreciation is sought by direct, first-hand inspection and examination of the property, where that is possible. A thorough examination is made and a specific value and cost of repair are determined from the actual condition in which it

is found. In any case, however, the depreciation written off on the books of the assured has a direct bearing and it is given the same consideration and weight as would be given to any representation made in good faith.

Depreciation taken on the books of the company is, however, neither final nor binding upon assured or insurer. It is recognized that depreciation may be excessively or inadequately provided for, and book depreciation will be increased or decreased as the circumstances warrant. In no event do insurance companies attempt to limit the value of property at the time of a fire to the amount at which it is carried on the books of the company.

There is a general understanding on the part of fire insurance companies that as a matter of financial policy depreciation may be written off excessively or inadequately. There is on the other hand only slight recognition of the fact that obsolescence, physical deterioration and the other contingencies limiting the useful life of property may not at a given time correspond with the depreciation provided for by the accountant's regular annual fixed charge for those items.

It accordingly appears desirable that there be more extensive recognition of the distinction between the accountant's depreciation and depreciation for insurance purposes.

POINT III

Adjusting Depreciation to Production

What can be done in a period of slow business recovery to ease the burden of fixed charges, particularly that arising from depreciation? The depreciation charge cannot be abandoned simply because profits are non-existent, for depreciation accrues whether or not there is a dollar of profit. But is the full normal charge for depreciation any more justified in a period of half-time production?

Obsolescence is supposed to develop whether the plant is idle or running, but even this has been questioned. The difficulty of getting new capital in a period of depression alone thwarts the introduction and development of improvements, and concerns struggle on with equipment that might otherwise be scrapped.

Even granting the presence of obsolescence, wear and tear

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Even granting the presence of obsolescence, wear and tear

are ordinarily less when a plant is running half of its accustomed capacity.

During war-time production equipment was operated at pressure far above normal, entailing extraordinary wear and tear, to compensate which an extra allowance for depreciation was recognized as necessary.

If this was so, if excess operation meant excess depreciation, is not the converse true? Does not light operation warrant a scaling of depreciation? Are manufacturers not justified in minimizing their losses by adjusting depreciation charges to the flow of depreciation? Fifty per cent production does not warrant the abandonment of depreciation charges or even a 50 per cent reduction, if obsolescence proceeds irrespective of production, but cannot a point be determined somewhere between 50 per cent and 100 per cent of the normal depreciation allowance which would correctly represent the situation of semi-normal production?

It is this situation, particularly as it affects newly organized concerns, that Sir A. Lowes Dickinson refers to in his book, "Accounting—Practice and Procedure:"

> "STRAIGHT LINE METHOD.—The second or straight line method has been found on the whole the most satisfactory for a going concern in an average condition, but for a new plant it results in a considerable accumulation during earlier years while the plant is getting down to its average, say 75 per cent condition, and this accumulation will in all probability not require to be expended on renewals.
>
> "This method lends itself readily to a sliding scale adjustment by which, as is proper, the provision for depreciation may be varied in accordance with the amount of business done. If a plant is working at only 50 per cent of capacity and is thoroughly maintained the depreciation due to wear and tear is undoubtedly much less than if it were working at 90 per cent of capacity, while that due to obsolescence is unchanged. On this basis, for any particular plant, a sliding scale of depreciation, according to used capacity, may be prepared which will be just to both present and future owners, subject always to the necessarily estimated character of all depreciation allowance."

From all sides comes evidence of the fact that manufacturers are thinking about and studying the possible relation of depreciation to production. Thus, the Fabricated Production Department is in receipt of the following letter from a prominent manufacturer:

> "We are at this time making a study of 'depreciation.' Have you any information that you could let us have on this subject in general, particularly with reference to a method of charging 'depreciation' in a more adjustable way, by which we can charge a smaller amount of 'depreciation,' due to idle machinery, etc., than would be charged in normal times when our plant is in full operation. In other words, we are trying to avoid charging the same amount to 'depreciation' at present when we are running at about 25 per cent capacity as we were during the year 1920, when business was much better."

Along the same line, from sources widely separated, are cited two adaptations of depreciation to production. The first illustration is taken from Bulletin "F," Obsolescence and Depreciation, issued by the Treasury Department and is indicative of the position of that Department.

A contractor purchases machinery for use only in performing a certain contract, which machinery will be worthless or have very little or no salvage value upon completion of the contract on which he will be engaged for a year and a half. But the number of units of work or percentage of completion accomplished the first twelve months and during the second period of six months may be equal. The contract may call for the making of an excavation and the same number of yards may be excavated during each of the above periods. Under such circumstances if the contractor returns his gross income each year on the basis of the percentage of completion of the contract *he will be permitted to spread the total amount of the depreciation allowance equally over the two periods, deducting half the total amount for the first twelve months and the other half for the succeeding six months.*

The second illustration, supplied by a manufacturer of metal products, indicates that an estimate of depreciation based on expected performance can become very exact. This company cal-

culates its depreciation on Ford cars used by its salesmen at 2 cents a mile and reports that the last thirty cars sold, exchanged or scrapped showed an average depreciation of 1.9 cents per mile and that these thirty cars were operated between five and six hundred thousand miles in all.

The attuning of depreciation to the flow of production is thrown out for thought and discussion in a year of slackened production and demand, when the fixed expenses of operation fall particularly heavy upon the shoulders of business men.

POINT IV

The Operating Department Can Aid in Holding Depreciation to a Minimum

Depreciation is in part inescapable and in part unwarranted. Wear and tear cannot be entirely made good even by the best of care. An expanding business outgrows plant and equipment, new improvements send even functioning machinery to the scrap pile. That is all true, but carelessness unnecessarily curtails the useful life of assets. Thus a correspondent writes in to the Department:

> "In the hands of some competent operators, for example, a band sawing machine may be just as good fifteen years after it is built, whereas if it is in the hands of a careless operator it may be worn out in six or eight years."

This would indicate in the particular illustration at least a 50 per cent margin of preventable depreciation.

Waste is rarely due to design; nearly always to carelessness. The proper and regular oiling of machinery, the adjustment of bearings, the proper conditioning of belts and a discriminating use of the hammer and monkey wrench all aid equipment to render that service for which it is designed, while timely and careful repairing will save many a machine from the scrap pile.

Require your operating department to eliminate unjustified depreciation.

A distinction is necessary between maintenance, the purpose of which is to keep property at its present general condi-

tion, and renewals and replacements, which tend to prolong the useful life of property, since maintenance is met from current expenditures and renewals and replacements are charged against the depreciation reserve. Extreme cases of maintenance and renewals and replacements are easily enough classified. Thus, the repairing of a broken window-sash is maintenance, the laying of a new roof a renewal, but there are a host of border-line cases defying definite classification, and accountants as a practical proposition fall back upon an arbitrary sum above which it is a renewal, below which it is a repair. As writers on depreciation warn, this standard should be kept low or it will result in charging capital outlays into current costs.

The Electrical Manufacturers' Council, and following them the National Association of the Paving Brick Industry, have adopted a somewhat different treatment of maintenance and depreciation. In maintenance are included all repairs and partial renewals. This results in a high maintenance charge and a low charge for depreciation. It is possible by this method to know just how much is spent on the upkeep of any particular building, machine or piece of equipment and to decide therefrom whether to replace or continue renewing. This information is of the utmost importance, where property is subject to unusual wear and tear, resulting in upkeep charges that may even approximate the cost of new equipment.

POINT V

Obsolescence is Often the One Most Important Factor Controlling the Useful Life of Property

The importance of obsolescence as it affects the useful life of property is not entirely appreciated. Before it wears out property is generally replaced by something bigger and better. Give the American business man a machine that will render better and cheaper service, and he will scrap his present equipment, even though the paint has not worn off.

In response to a request for the useful life of a woodworking machine, the following characteristic reply was received:

> "We wish to advise that we buy the best and heaviest woodworking machinery built, and while we use this equipment hard, we keep our plant to

> date, and are constantly purchasing the latest equipment and replacing the old with same. Consequently we have never had a machine in our service long enough to wear it out or even to wear it to the point where we felt it was nearing its end, and consequently we are not in a position to state from actual experience the exact life of any piece of woodworking machinery suitable for our requirements."

Another correspondent writes:

> "As to obsolescence, it may also be well to point out that machinery and equipment especially designed for exclusive use in certain industries, is susceptible to earlier obsolescence than machinery and equipment which is more or less standard and is not designed exclusively for one product. A striking example is the machinery which is used in the production of incandescent lamps. The slightest improvement in lamp-making machinery may involve so large a saving of productive labor that there would be no hesitation in scrapping the entire equipment, although it may have been in use for only a very short time.

For these and a myriad of other concerns the useful life of property is strictly limited by the law of the survival of the fittest. Machinery is replaced not because it has worn out, but because there is something in the market which will do the job better. So much is this the case that P. D. Leake in his book, "Depreciation and Wasting Assets," states that—

> "In selecting the proper basis for an annual charge to revenues for depreciation of industrial plant, the evidence is irresistible that expiration of time is the dominating factor * * *. It is astonishing how rarely the rate of destruction of value, due to actual use, overtakes the rate of destruction due to constant and inevitable decay and liability to obsolescence."

At all events, in determining the useful life and rate of depreciation of machinery and equipment give this factor of obsolescence the consideration and allowance it deserves.

POINT VI

Abandon Rule-of-Thumb Rates of Depreciation. Study Your Own Depreciation Situation and Check Your Experience by That of Your Trade Group

Depreciation is complex, not simple, but the difficulty of the task of computing depreciation does not warrant the abandonment of it. There is altogether too much reliance on rule-of-thumb typical rates of depreciation,—2 or 3 per cent for buildings, 5 or 10 per cent for machinery, 20 per cent for trucks, etc.

The best judgment regarding depreciation would be only an approximation frequently belied by subsequent experience, but there is a difference between guessing and estimating. A guess cannot be justified. It is a hit or miss affair. An estimate of depreciation attempts to take in all the factors governing a given situation, to assign weights and importance to them, to rely upon past experience and actual inspection of property, to differentiate between the various kinds of machinery, buildings, etc., and to apply depreciation with reference to a particular asset or group of assets. The need of classifying property will be more fully discussed in connection with recording depreciation.

It should, moreover, be recognized that the depreciation experience of any one firm, however large, is limited and should be supplemented and modified by the experience of the industry. Each industry, with the aid of its technical men, should establish for itself standard rates of depreciation, which rates should be set upon defined conditions and after agreement as to the line separating repairs from renewals. Tables of depreciation built up from group experience can be accepted as indicating the normal, customary and usual depreciation. They are, however, not designed to meet all contingencies or to take the place of private judgment. *It is expected that adjustments of these normal rates either upward or downward will be made to suit the individual requirements. In the last analysis the individual must determine his own depreciation allowance.*

In the interest, however, of enlightened competiton numerous trade groups have made or are making a careful and scientific study of depreciation. Among such trade groups may be included the Cost Association of the Paper Industry, National Association of Ice Industries, Atlantic Coast Shipbuilders' Asso-

ciation, National Association of Folding Box Manufacturers, American Malleable Castings Association, Railway Car Manufacturers' Association and Associated Manufacturers of Electrical Supplies. It is hoped that other trade groups will follow the lead of these associations.

POINT VII

A Proper Accounting for Depreciation is Necessary

Several facts arise in accounting for depreciation that are worth stressing. In the first place, it is preferable that depreciation be accumulated in a reserve, for when depreciation is written off directly against the asset, original cost is frequently lost track of and depreciation is soon computed on a depreciated base. By way of illustration, if a building cost $10,000 and the yearly depreciation is $400, the entry, assuming depreciation is charged annually, would be

Depreciation	$400	
Reserve for Depreciation—		
Buildings		$400

If the depreciation were charged directly against the asset the entry would be

Depreciation	$400	
Buildings		$400

Whereupon the tempation would be to base the next depreciation charge on the remaining sound value of $9,600 instead of the original cost of $10,000. Much searching of old records that has taken place in the last four years in the attempt to establish true original costs have been made necessary by just this practice of writing off depreciation directly against the asset.

Again, the depreciation reserve is there for a purpose. It is frequently the practice to allow the reserve to lie fallow and do nothing. With each succeeding year it increases steadily until it gets out of bounds and becomes a positive nuisance. As a matter of fact, all renewals should be charged to the depreciation reserve, and the reserve is directly affected when the property is exchanged, sold, replaced, abandoned or lost. Have your reserve for depreciation in line with and truly represent what is actually happening to your plant and equipment.

Another matter to bear in mind is that your estimate of depreciation rate and the useful life on which it depends are not necessarily final. Things have a way of lasting longer than anticipated, while, on the other hand, unforeseen circumstances bring the usefulness of equipment to an untimely end. When it becomes plain that the life of the property becomes over or under estimated, re-life your property and revise your depreciation rate accordingly.

Intimately connected with the accounting for depreciation is the method of depreciation. Accountants have suggested numerous methods of charging depreciation; sinking fund, declining balance, fractional method–weighted years, etc., each with special advantages and strong points, but for firms who heretofore have had no consistent depreciation policy and wish to adopt one the fixed percentage or straight line method is suggested. It has been shown that when production is abnormally high or low modification of the straight line method is sometimes necessary but, on the whole, this method is the simplest and is in full accord with the requirements of the Treasury Department. The straight line method calls for equal annual depreciation deductions and assumes that the rate of depreciation is uniform during the entire useful life of the property.

To illustrate the fixed percentage or straight line method of depreciation:

A machine cost $120. Its estimated salvage or scrap value at the end of its usefulness is $20. It has an expected normal useful life of 10 years. Deducting the salvage value from cost, we obtain a remaining sound value of $100. This divided by the expected years of usefulness gives an annual depreciation of $10. Expressed in terms of a formula:

$$\text{Annual Depreciation} = \frac{(\text{Cost New} - \text{Scrap Value})}{\text{Useful Life}}$$

The impression must not be given that the fixed percentage method of depreciation is the sole method of depreciation approved by the Treasury Department. Article 165 of Regulations 45 (1920 Edition) to the Revenue Act of 1918 provides that—

> "The Capital sum to be replaced should be charged off over the useful life of the property either in annual installments *or in accordance with any other recognized trade practice, such as an*

apportionment of the capital sum over units of production. Whatever plan or method of apportionment is adopted must be reasonable and should be described in the return."

POINT VIII

Depreciation Should be Adequately Recorded

It is not unusual to find assets grouped under such general captions as Buildings, Machinery and Equipment. The term "Buildings" may include wood, concrete, steel or brick structures designed for heavy use or light, may include fencing and wood bins, drainage systems and docks. The term "Machinery" may comprise electrical generators and steam engines, hydraulic presses and steam hammers, lathes, planers and boring and milling machines, woodworking machinery and small tools. The "Equipment" may vary from a locomotive train to pickling tanks, from glass furnaces to fire systems. The span of usefulness of these assets may vary from three years to thirty-three, yet all will bear a 3 per cent, 5 per cent or 10 per cent rate of depreciation, nor will it be possible to determine the depreciation record or history or the undepreciated value of any specific unit or type of property.

A classification of property is a prerequisite to the proper recording of depreciation.

Tax regulations, as well as ordinary accounting propriety, require that the allowance for depreciation should be computed and charged off with *express reference to specific items, units or groups of property*, each item or unit being considered separately or specifically included in a group with others to which the same factors apply.

Hence a proper record of depreciation requires that the specific items and units of property be enumerated and classified by kind, group or department, and that their original cost be ascertained, as well as the accumulated depreciation and the remaining useful life.

To do this will not be easy for an established concern accustomed to taking depreciation on a general grouping of property, such as Buildings or Machinery, and for such a concern "the splitting up and allocation of the old capital outlay must be

approximate." Such allocation will, however, be greatly assisted by a competently made appraisal.

A complete record and history of depreciation as well as of plant and equipment can be secured through the property ledger, which aims to do for plant and equipment what the perpetual inventory record does for stock on hand.

Such a property ledger will tie up with the general books of account, and will supply the detail for the total cost of property, the depreciation written off in any one year, the additions, renewals and disposition of property, the amount in the depreciation reserves, the estimated scrap value, and the net remaining sound value of property.

In addition, the property ledger will contain a brief description of all property, where located, plant identification, the name of manufacturer and manufacturer's number, from whom and when purchased, the total cost, including freight and installation charges, the estimated useful life of equipment and rate of depreciation, and it may likewise have a record of repairs, replacement values and a tabulation of monthly depreciation.

The property ledger can be conveniently compiled in card or loose leaf form, and each card or sheet ought to last from twenty to thirty years. Practically the same form can be used for departmental and final summaries of plant and depreciation. The complete financial, plant, and performance history of each item of property secured in this way guides future outlays upon plant, helps the accurate determination of loss or gain on specific assets, is of some importance in credit applications, simplifies the compiling and checking of tax and annual statements, and is invaluable in the event of a fire loss. The surprising thing is that there is still a comparatively large number of concerns operating without such a property ledger.

The arrangement of the form of property ledger as well as its size, etc., will depend on the ingenuity of the executive or cost accountant designing it, as well as upon his sense of what is important information for his particular requirements, industry or plant. It may be desired to compress all the information on a small card, using both sides, or it may be considered wise to keep track of monthly depreciation, the cost of repairs or replacement values. These are merely details to be adjusted to and by individual needs.

ITEM Engine — MANUFACTURER Brighton Engine Co — USEFUL LIFE 15 Years
DEPT. Trimming — MFRS. No. B-93217 — as of 1/1/21 — 12 Years
PLANT No. S.E.-T.1799 — PURCHASED FROM Evans & Clark-Exeter No. 3906

DATE	DESCRIPTION — REMARKS	REF.	TOTAL COST	SCRAP VALUE	WEARING VALUE	ANNUAL DEPRECIATION	IN DEPRECIATION RESERVE	REMAINING VALUE
1921 June 1	50 H.P. Engine. Invoice	Y.731	2500 —					
	Freight	Y.729	15 —					
	Installation	Y.741	165 —	150 —	2550 —	170 —	170 —	2380 —
			2680					
1922						170 —	340 —	2210 —
1923						170 —	510 —	2040 —
Oct. 9	Lubricator installed	Y.791	150 —		150 —			150 —
1924			2830		2700		692.50	2007.50
1925						182.50	875.00	1825 —
July 12	Piston replaced	Y.907				182.50	(300 —)	300 —
1926							575	2425
June 10	Engine sold - $2000 Less $97.12					177.08	752.08	1147.92

Form of Plant Ledger; suggested size 8½ x 11 inches.

To illustrate the use of the property ledger, it is supposed that a 50 H. P. Steam Engine is purchased from Evans and Clark for use in the Trimming Department. S. E.-T. 1798 is its plant number, S. E.—symbol for Steam Engine, T. for Trimming Department. This plant number appears on the name plate of machine where it can be easily seen. If the asset is frequently moved about the plant, it will be given a location number. The manufacturer is the Brighton Engine Co., the manufacturer's number B-93217. Its useful life has been determined at 15 years. The invoice for the engine comes to $2500, freight charges $15, installation $185, a total cost as of January 1, 1921, of $2700. The scrap value is computed at $150, leaving a wearing value of $2550, and an annual depreciation of $170, arrived at by dividing the wearing value by the useful life of 15 years.

The record of the engine is as follows:

1921. Normal depreciation of $170, no additions, no renewals. At the end of the year there will be $170 in the depreciation reserve and a net remaining value of $2380. (Wearing value $2550 less depreciation reserve $170).

1922. Normal depreciation of $170, no additions, no renewals. At the end of the year there will be $340 in the depreciation reserve and a net remaining value of $2210.

1923. Normal depreciation of $170, no renewals, an addition in the way of a lubricator, installed Oct. 8, at a cost of $150. At the end of the year there will be $510 in the depreciation reserve and a remaining value of $2190. (The former wearing value of $2550 has been increased $150 to $2700, by the cost of the lubricator; $2700 less $510 in depreciation reserve, leaves a net wearing value of $2190).

1924. The normal depreciation has been increased to $182.50. This is arrived at by dividing the new remaining value $2190 by the remaining useful life of 12 years. No additions, no renewals. There is accordingly at the end of the year $692.50 in the depreciation reserve, and a net remaining value of $2007.50.

1925. Normal depreciation of $182.50. Other things being equal, there would accordingly be $875 in the depreciation reserve at the end of the year, and a net remaining value of $1825, but on July 12 the old piston has been replaced by a new one costing $300. This $300 is charged against the accumulated depreciation, re-

ducing that to $575, and increasing the remaining value by just that much to $2125.

1926. At January 1, 1926, the asset has been in use five years. Its remaining useful life accordingly would be ten years, but the replaced piston, etc., it is assumed, prolongs the useful life two years, and the remaining useful life of the asset is correspondingly changed to twelve. This remaining useful life, twelve years, divided into the remaining value, $2125, gives a new annual depreciation charge of $177.08. At the close of the year, the depreciation in reserve will amount to $752.08 and the remaining value $1947.92.

1927. On the tenth of January the machine sold for $2000. On the proper page of the journal an entry corresponding to the following will appear:

Cash	$2000	
Reserve for Depreciation.....	752.08	
Profit and Loss	97.92	
Buildings		$2850

The sales price, $2000, plus the accumulated depreciation, $752.08, $2752.08, deducted from the total cost $2850 indicates a loss of $97.92 on the transaction.

A notation can be written in red ink across the face of the property ledger page, or the items of cost, scrap and wearing value, depreciation reserve and remaining value closed out. At all events, the page will be taken out and filed in the rear of the ledger.

This hypothetical history is given to show how the property ledger operates and by what manner of contingencies it is affected.

Conclusion

By way of conclusion, the following points concerning depreciation are chosen as of practical day-by-day service:

First: Charge depreciation, so that profits may be real, and not in fact a distribution of capital.

Second: That costs may be complete, charge depreciation against current operations.

Third: Factory cooperation will minimize unjustified depreciation.

Fourth: Make proper allowance for obsolescence. It often is the determining factor in depreciation.

Fifth: Avoid rule-of-thumb rates of depreciation. Frequent inspection, adequate records, your own experience checked by that of the industry—that is the best guide.

Sixth: Record depreciation with reference to specific items or units of property. The plant ledger can be used effectively for this purpose. In case of a fire such a detailed record will save you much worry.

This pamphlet stresses the main principles of depreciation, but does not in any way exhaust the subject. Its aim is to suggest and encourage further intensive study by individuals and industries. It is our feeling that depreciation, more often than any other single item of cost, blurs the line dividing profits from losses. A depreciation allowance which in the first place is ample and in the second in conformity with fluctuating manufacturing conditions will change many an imaginary profit into a real loss, and supposed losses into actual profits. It thus warrants careful and comprehensive study.

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